



## Welcome to the New *Environmental Health Perspectives*

Welcome to the first issue of the new *Environmental Health Perspectives*: it looks a lot different from the original journal, but the tradition of dedication to good science remains unchanged. We have published 100 volumes of *EHP* and this, volume 101, is a new beginning. We have changed formats and provided new ones to accommodate the numerous varieties and forms that scientific information can take. We want to publish the very best environmental health research and at the same time provide a forum for discussion and dissemination of information about what is going on in the environment.

We want our readers to contribute to this enterprise by submitting research manuscripts, writing letters, and sending us news. Your involvement is particularly important because we believe that many environmental problems have arisen today because of inadequate communications in the past. Traditionally, laboratory researchers have tended to communicate primarily with each other, and the dissemination of information to the public has been slow and haphazard. It is clear that enhanced communications could contribute to the avoidance of environmental crises through both increased understanding of the underlying science and the identification of potential problems before they become overwhelming, expensive, and perhaps irreversible.

This is the age of information, and we want *EHP* to be a focal point, a forum, and a node through which environmental health issues are identified, examined, and resolved. In view of these ambitions it is appropriate that the date on the cover of our first issue be April 22, 1993, the 23rd Anniversary of Earth Day. We are pleased to contribute to the celebration of Earth Day 1993 by the inauguration of our revised journal dedicated to the health of the environment. Our cover is a symbol of our focus, the planet earth. Our cover provides a perspective of our planet reminding us that the earth is finite in its scope, finite in its resources, and finite in its ability to sustain life. Let us work together to make our planet a good place to live; after all, it is the only home we have.

Gary E. R. Hook and George W. Lucier  
Editors-in-Chief

## Opportunities in Environmental Health Science Research

The National Institute of Environmental Health Sciences and the National Toxicology Program have important roles in preventing human disease and containing the spiraling health and regulatory costs of the nation. The coalescence of toxicological testing with basic and mechanistic research brings the full range of scientific inquiry to bear on studies of the environment and human disease. The explosion of new knowledge and technology over the past 25 years provides the NIEHS/NTP with the tools necessary to hasten the understanding of the interactions between the environment and individual genetic susceptibility. This new knowledge can be applied to advance the fields of environmental medicine, public health, environmental protection, and risk assessment.

Environmental agents to which humans are exposed from conception to death can have significant health effects. The contribution of the environment to human disease and dysfunction is unknown, in part because environmentally related effects involve complex interactions between environment and genetic constitution over the course of many years. The interplay among the environment, genes, and time in the etiology or progression of human diseases and dysfunctions significantly complicates population-based environmental studies and makes it difficult to establish causal relationships.

The NIEHS/NTP has always operated on the principle that the Institute's research programs should be responsive and relevant to the needs of Americans without sacrificing the quality of research excellence or inhibiting innovation. The past 18 months has been marked by extensive review and strategic planning to make certain that cutting-edge technologies are used to address a broad spectrum of human health problems related to the environment. In addition to the input of various advisory panels, meetings were held with many representatives from Congress, Executive Branch agencies, environmental and labor groups, private and public health care practitioners, industry groups, academic researchers, and concerned citizens to understand their perceptions of the role and potential of NIEHS/NTP to address their needs and concerns. Based on these discussions and reviews, NIEHS/NTP has established new research priorities that emphasize two critical areas of science: basic biology and the environment and molecular prevention/intervention. Additionally, the toxicological testing program will be expanded to include testing a larger number of environmental agents and the development of a more experimental, hypothesis-driven research component [see Olden (*1*) for a more extensive discussion of the toxicological testing program].

New and expanded research into environmental influences on human health must be carried out if we are to understand the full range of biological processes and disease states of clinical importance. Therefore, consideration of environmental agents as causes of human diseases must be accorded a high priority in establishing the nation's health research agenda. To understand environmentally associated human diseases, we need a better knowledge of how chemical messages that originate outside the cell can modulate cell function by switching genes on and off or by modulating signal transduction pathways. In addition to understanding the nature of the molecular/cellular interactions with environmental agents, we must relate the molecular or cellular effects to the health status of the human organism.

Numerous environmental agents have been identified that interact with and damage DNA; this may represent an important mechanism underlying many human diseases and dysfunctions. Because genes and the proteins they encode are responsible for all cellular function, control, communication, and regulation, the interactions of environmental agents with genes and gene products can lead to disruption of critical biological functions. However, susceptibility of biological systems to environmental perturbation is likely to be highly variable because the genetic make-up of each individual is different. The ability of electrophilic chemicals to damage DNA and cause mutations has been demonstrated for many chemicals, yet there are chemical teratogens and carcinogens that show no propensity for interacting with or altering DNA. Several of these chemicals have been shown to interact with receptor proteins and perturb signal transduction systems involved in cellular growth and differentiation. This phenomenon and other